FREE PILE RATIO - HOW TO MONITOR

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A METHOD TO MONITOR YARN FLATTENING

An indicator for field performance and life expectancy can be the amount of vertical free pile, which has a direct impact on the ball surface interaction, player surface interaction and the ability to perform remediating maintenance back to a suitable level.

In this Field Notes we bring attention to the ability of a field owner, facility manager or maintenance operative to apply a basic pile ratio over time to monitor performance to the point where recovery might not be achievable. We have used a live field case study as an example.
All fields will differ due to construction but change relative to ball roll can always be monitored

HOW TO MEASURE PILE RATIO

Important note; Free pile, non elongated (mm) is measured with the Turf Prism

Field Age Year	1	2	3	4	5	10
Free pile, non elongated (mm)	20	15	10	7	5	3
*Pile length - infill depth (mm)	20	20	21	22	22	22

*This is the total pile length of the product minus the infill depth, which in reality is the available free pile

Pile Ratio	1.0	0.75	0.48	0.32	0.22	0.14

Free Pile Measurement

REACTING TO CHANGE

Initial evidence has shown that an index less than 0.75 will be a critical threshold in respect to ball roll tolerances on Quality Pro stadium fields however it is key to focus on degradation versus time for an individual field as they differ due to construction.

Pile Ratio	1.0	0.75	0.48	0.32	0.22	0.14
Ball Roll (m)	5.6	6.9	8.9	10.6	12.2	13.8

Infill Depth Measurement

If you would like further detail, or have questions please contact us at info@sportslabs.co.uk

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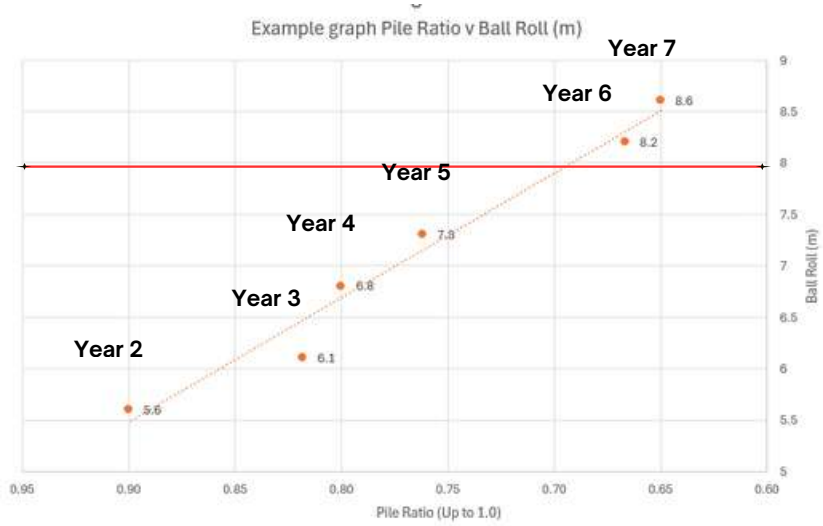
CASE STUDY

This case study was carried out on a stadium pitch (less than 10,000 capacity) but used by the local community between matches. The pitch is tested annually and the degradation curve shows the point when the ball roll exceeds 8.0m. This is the current llimit for Ball Roil at FIFA Quality Pro level

We have graphed the data from when the pile ratio has dropped below 1.0, which was on the year 2 retest to the most recent test on year 7. This field is a 50mm product with 31mm of infill depth on the initial test.

For this specific field and product the critical Pile Ratio is presented as 0.69.



Year	2	3	4	5	6	7
Free pile, non elongated	18	18	16	16	14	13
Pile length - infill depth	20	22	20	21	21	20
Pile Ratio	0.90	0.82	0.80	0.76	0.67	0.65
Ball Roll (m)	5.6	6.1	6.8	7.3	8.2	8.6

The field will get routine and specialist maintenance along with infill top-up to ensure performance remains within acceptable limits and to delay the need for resurfacing.

MAINTENANCE TO PASS - A THRESHOLD

The key to effective maintenance is understanding your field's unique performance threshold. Monitoring pile ratio data over time serves as a passport for field management, helping you accurately predict when resurfacing may be required and whether your sinking fund is on track.

Ball roll targets, whether for EN 15330-1, FIFA, FA Register or other national tolerances, are a key metric to track in order to manage field performance and longevity.

Maintenance, in line with the manufacturers operations and maintenance manual, is critical not only to performance and longevity, but also to comply with the manufacturer's warranty. It is therefore critical to consult this in your procedures.

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